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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER	
HECKENBERG JR, D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/470,967	SETA ET AL.	
	Examiner	Art Unit	
	Donald Heckenberg	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-34 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-34 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,6 .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

1. The information disclosure statement filed August 21, 2000 contains to references- JP 4-7180 and JP 4-95329 which have not been considered as they are not in English and there is no statement of their relevance, and they therefore fail to comply with MPEP 609. If such a statement is made with the reply to this Office Action, the references with be marked as considered on the I.D.S. and a copy will be sent with the next Office correspondence.

2. Claims 11 and 26-34 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. These claims recite the method of operation limitation that the plasticating unit carries out the plastication of the resin continuously during all the period of the molding cycle. This is the only limitation presented by the claims, and does not further limit the structure of the claimed apparatus.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 21-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 21-25 all recite the limitation "a displacement the screw". There is insufficient antecedent basis for this limitation in the claim. The screw is not previously defined in any of the parent claims to these claims.

It is believed that the Applicant intended these limitations to define a claim structure depending from claim 3 which describes a displacement of a screw. For the purposes of examination, it will be assumed that these limitations are present in the claims rather than the described limitations. For example, claim 21 will be interpreted as incorporating the limitations of claims 3 and 4 rather than 1, 2, and 4 as is currently recited. Claims 22-25 will be treated similarly as though they depended from claim 3. However, appropriate clarification and correction is required.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 11, 13, and 26-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Annis, Jr., et al. (US 3,674,401).

Annis, Jr., et al. teaches an injection molding apparatus, with reference to fig. 3, the apparatus comprising a plasticating unit 6 for plastication, an injection unit 50 connected to the plasticating unit through a connecting passage 12 to inject the plasticated material into a mold 66, and a buffering unit 51 provided in the connecting passage to reserve the material plasticated in the plasticating unit in an amount at least equal to the injection quantity of the resin per shot, and feed the resin into the injection unit. Annis, Jr. et al. further teach the buffering unit to comprise a pot 51, a plunger 52 disposed in the pot applicable to be moved forward and backward in the pot, a buffering chamber provided between the pot and the plunger for reserving the plasticated material, and

a means for energizing 54 the plunger in the resin extrusion direction.

In a different embodiment as shown in fig. 2, Annis, Jr., et al. teach a plasticating unit 2 for plasticating a material, and an injecting unit 14 connected to the plasticating through a connecting passage 18 to inject the material into the mold 44, the plasticating unit comprising a cylinder 4 and a screw 6 rotatable and movable in the axial direction in the cylinder (see col. 5, lns. 68-73), as such that a buffering chamber is defined by a top portion of the screw and cylinder to reserve an amount of the material in an amount that is equal to the injection quantity as such the with a means for energizing the screw forward in the axial direction the material is feed into the injection unit (see col. 5, lns. 73 - col. 6, ln. 5). Annis, Jr., further teaches in this embodiment that the energizing means comprises a fluid-pressure cylinder 38.

Regarding claims 11 and 26-27, as noted above in the claim objection these claims recite only method limitations of the plasticating unit carrying out plastication of the material during all periods of the molding cycle, which is not germane to the claimed apparatus. Further, Annis, Jr., et al. teach an apparatus that may be run in such a manner, and therefore meets this claim limitation.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to

point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 4-7, 12, 14, and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Annis, Jr., et al. in view of Cheng (US 5,098,267).

Annis, Jr., et al. teach the apparatus as described above. Annis, Jr., et al. fails to disclose the energizing means for the injection plunger embodiment, or teach the use of a spring or electric actuator for the embodiment using a reciprocating screw.

Cheng teaches an injection molding apparatus comprising an injecting plunger 12, wherein the plunger is energized by a spring 18, or alternatively a mechanical device or fluid pressure cylinder (col. 3, lns. 62-65).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified the apparatus of Annis, Jr., et al. as such to have used a spring, fluid pressure cylinder, or mechanical device such as an electric actuator as the energizing means as suggested by Cheng

for the injection plunger in the injection plunger embodiment, or the screw in the reciprocating screw embodiment, because these are all suitable alternatives to provide the energizing force for the injection plungers.

Regarding the fluid pressure from a fluid pressure source being constant as recited in claim 7, this is a method limitation. The use of a fluid pressure cylinder like the ones both disclosed by Annis, Jr., et al. and Cheng are clearly capable of being provided with a constant fluide pressure, and therefore meet the claim limitation.

Regarding claims 28-31, as noted above in the claim objection these claims recite only method limitations of the plasticating unit carrying out plastication of the material during all periods of the molding cycle, which is not germane to the claimed apparatus. Further, Annis, Jr., et al. teach an apparatus that may be run in such a manner, and therefore meets this claim limitation.

11. Claims 9-10 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Annis Jr., et al. modified by Morita (US 6,109,909).

Annis Jr., et al. teach the apparatus as described above. Annis Jr., et al. fail to teach the apparatus to further

comprise a position detecting sensor for detecting the placement of the plunger in the plunger embodiment, or the position of screw in the screw embodiment, and a plastication controlling means for controlling the plasticating unit corresponding to the displacent detected by the position sensor.

Morita teaches an injection molding apparatus comprising an injection plunger 18 or 22 wherein the plunger is provided with position sensor and means for adjusting the plastication unit based on the displacement and position of the plunger (col. 12, lns. 6-30).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified the apparatus of Annis Jr., et al. as such to have provided the apparatus with position sensor in working relation with a plastication controlling means as suggested by Morita because this would allow for control of the material feed to the buffering chamber, and thereby control of the amount of material injected into the mold.

Regarding claims 33-34, as noted above in the claim objection these claims recited only method limitations of the plasticating unit carrying out plastication of the material during all periods of the molding cycle, which is not germane to the claimed apparatus. Further, Annis, Jr., et al. teach an

apparatus that may be run in such a manner, and therefore meets this claim limitation.

12. Claims 8, 15 and 32 rejected under 35 U.S.C. 103(a) as being unpatentable over Annis, Jr., et al. modified by Cheng as applied to claim 1-7, 11-14, and 26-31 above, and further in view of Taniguchi (US 5,002,717).

Annis, Jr., et al. and Cheng disclose the apparatus as described above. Annis, Jr., et al. and Cheng fail to teach a pressure sensor for detecting a pressure in the buffering chamber, and a pressure controlling means for controlling the energizing means corresponding to the value detected by the pressure sensor so that the pressure in the chamber is kept constant.

Taniguchi teaches an injection molding apparatus comprising an injection plunger 4 and buffering chamber assembly wherein the pressure in the chamber (injection pressure) is monitored using a pressure sensor 19 which works with a pressure controlling means for controlling the energizing means of the apparatus based upon the value detected by the pressure sensor (col. 4, lns. 45-59).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified

the apparatus of Annis, Jr., et al. and Cheng as such to have provided the apparatus with a pressure sensor for detecting the pressure of the buffering chamber and a pressure controller working with the pressure sensor to adjust the energizing means as suggested by Taniguchi because this would allow for better control of the pressure of the material being injected into the mold.

Regarding the pressure sensor and control being used to keep the pressure in the buffering chamber substantially constant, the desired pressure is dependent on the method and use of the apparatus, and as such not germane to the apparatus claims of the instant application. The device disclosed by Annis, Jr., et al., Cheng, and Taniguchi is capable of being used as such to provide a constant pressure, and therefore meets the claim limitation.

Regarding claim 32, as noted above in the claim objection this claim recites only method limitations of the plasticating unit carrying out plastication of the material during all periods of the molding cycle, which is not germane to the claimed apparatus. Further, Annis, Jr., et al. teach an apparatus that may be run in such a manner, and therefore meets this claim limitation.

13. Claims 16-19 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Annis, Jr. et al. modified by Cheng as applied to claims 1-7, 11-14, and 26-31 above, and further in view of Morita. Please note the interpretation used for claims 21-24 described above in the rejection under 35 U.S.C. 112, second paragraph.

Annis Jr., et al. and Cheng teach the apparatus as described above. Annis Jr., et al. and Cheng fail to teach the apparatus to further comprise a position detecting sensor for detecting the placement of the plunger and a plastication controlling means for controlling the plasticating unit corresponding to the displacement detected by the position sensor.

Morita teaches an injection molding apparatus comprising an injection plunger 18 or 22 wherein the plunger is provided with position sensor and means for adjusting the plastication unit based on the displacement and position of the plunger (col. 12, lns. 6-30).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified the apparatus of Annis Jr., et al. and Cheng as such to have provided the apparatus with position sensor in working relation with a plastication controlling means as suggested by Morita

because this would allow for control of the material feed to the buffering chamber, and thereby control of the amount of material injected into the mold.

14. Claims 20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Annis, Jr., et al. modified by Cheng and Taniguchi as applied to claims 1-8, 11-15, and 32 above, and further in view of Morita. Please note the interpretation used for claim 25 described above in the rejection under 35 U.S.C. 112, second paragraph.

Annis Jr., et al., Cheng, and Taniguchi teach the apparatus as described above. Annis Jr., et al., Cheng, and Taniguchi fail to teach the apparatus to further comprise a position detecting sensor for detecting the placement of the plunger or screw and a plastication controlling means for controlling the plasticating unit corresponding to the displacent detected by the position sensor.

Morita teaches an injection molding apparatus comprising an injection plunger 18 or 22 wherein the plunger is provided with position sensor and means for adjusting the plastication unit based on the displacement and position of the plunger (col. 12, lns. 6-30).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified the apparatus of Annis Jr., et al., Cheng, and Taniguchi as such to have provided the apparatus with position sensor in working relation with a plastication controlling means as suggested by Morita because this would allow for control of the material feed to the buffering chamber, and thereby control of the amount of material injected into the mold.

15. The following references are cited of interest as relating to the instant application.

Yabushita (US 5,389,315) teaches an injecting molding device with a buffering chamber which has an injection plunger.

Taniguchi et al. (US 5,028,373) teaches an injection molding apparatus with a displaceable screw acting as a plunger for injecting the molding material.

Blumer (US 3,611,503) teaches an injection molding apparatus with an injection plunger and a buffering chamber.

Morse (US 3,317,962) teaches an injection molding apparatus with a displaceable screw that acts as a plunger for injecting the molding material.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald Heckenberg whose telephone number is (703) 308-6371. The examiner can normally be reached on Monday through Friday from 9:30 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached at (703) 308-3322. The official fax phone number for the organization where this application or proceeding is assigned is (703) 305-7718, and the unofficial fax phone number is (703) 305-3602.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Donald Heckenberg
April 3, 2001

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